

Fig.2 System construction of material identification device

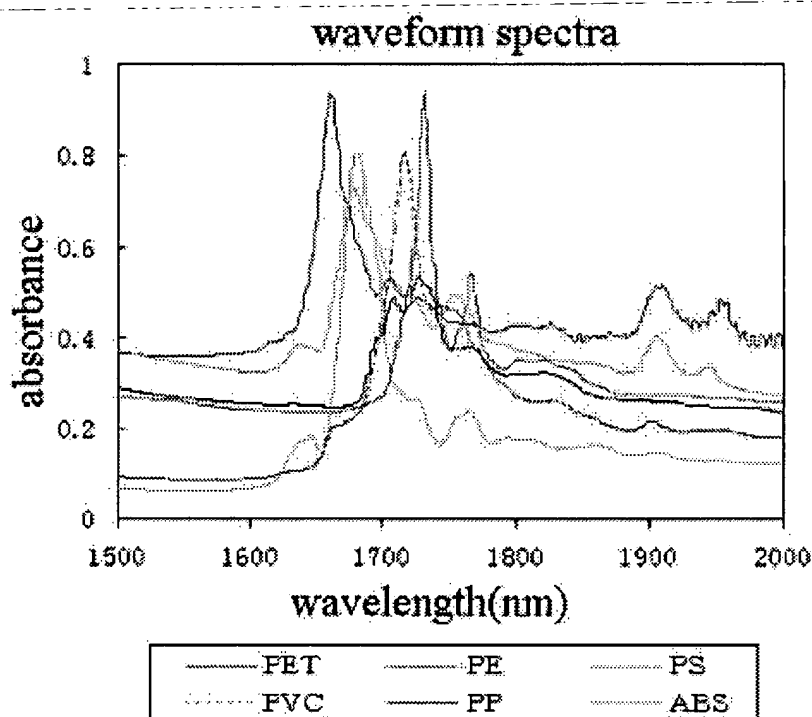


Fig.3 Waveforms of various plastics

## (1) Material identification

High speed and high accuracy identification of plastics by irradiating with near-infrared light for PE, PP, PET, PS, PVC.

## (2) Color identification

Various colors of PET bottles can be identified as transparent, blue and green bottles, or transparent bottles and colored bottles.

## (3) Metal detector

Metallic caps entrapped with the plastic bottles can be detected and deleted.

Following separation schemes are possible with the separator.

| Identification device          | identification   |
|--------------------------------|--|
| only material                  | example: PET, PVC, and others                                    |
| material+color                 | example: transparent PET, colored PET, PVC, and others           |
| material+color+metal detection | example: transparent PET, colored PET, metal capped bottles, PVC |

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## **Japanese Advanced Environment Equipment**

Waste Treatment and Recycling Equipment > Crushing Resource Recovery and Recycling Equipment > Classification and Resource Recovery Equipment

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# **Automatic Separator for Plastic Bottles**

## **1. General description**

Collected plastic bottles of various shapes are to be sorted according to the plastic species of the bottles for recycling to be practical. Thus, "The automatic separator for plastic bottles" can separate plastic bottles according to plastic species at high speed for assisting recycling of the bottles. The separator can be modified by adding special capabilities like separation according to color of PET bottles and to the presence of metallic caps on the bottles. Maximum separation capacity: 0.4 t/h, (with a slight change depending on bottle shapes and charging conditions)

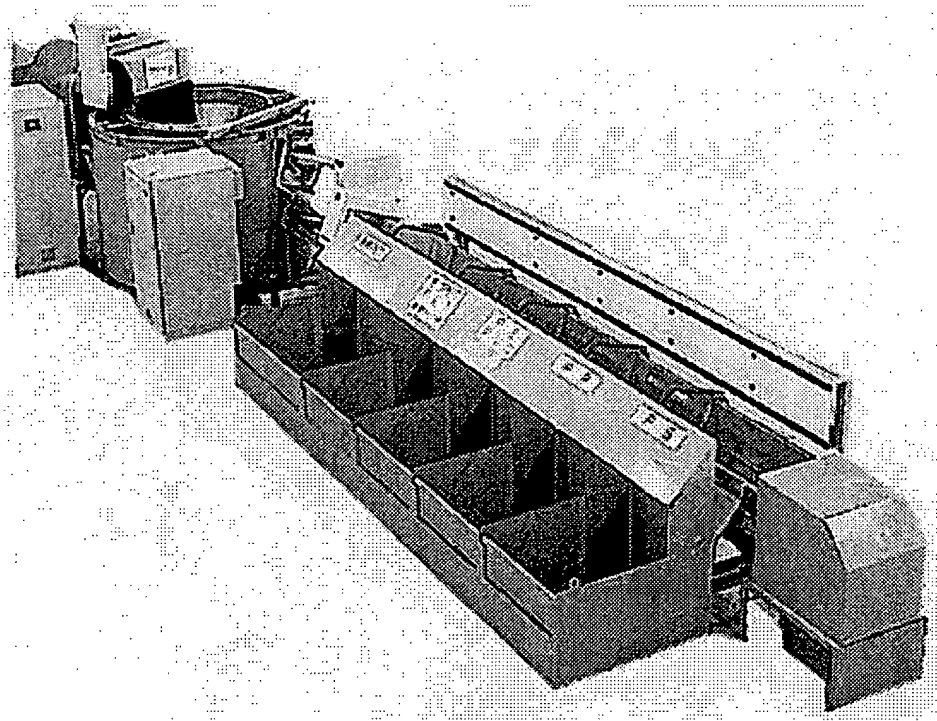


Fig.1 Automatic separator for plastic bottles

## **2. Principles of material identification**

The system construction of the identification device is shown in Fig. 2. Here, a halogen lamp is mounted on the device to illuminate near-infrared light on incoming plastic bottles. The bottles absorb the light at different wavelength according to the species of the plastic bottles as illustrated in Fig. 3. Thus, every reflected near-infrared light is analyzed for the absorption characteristics to identify the plastic species. Identification capabilities are listed below including material identification.